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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,592	11/06/2001	Oktay Necip Gunluk	2000-0392	9857

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EXAMINER	
HEINRICHS, CHRISTOPHER P	
ART UNIT	PAPER NUMBER
2663	

DATE MAILED: 07/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/993,592	GUNLUK	
	Examiner	Art Unit	
	Christopher P. Heinrichs	2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *4/10/2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,11-13 and 20* is/are rejected.

7)☒ Claim(s) *3,5-10 and 14-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 April 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 20 is rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 6,301,244 to Huang et al.

3. Regarding claim 12, Huang discloses a method of determining routes for transmitting signals through a network (see title), the method comprising obtaining a plurality of demands (request to connect to device 206B, col 5 line 7, triggers the method that obtains and explores a plurality of path finding demands as disclosed below) each demand having diversity requirements (col 5 lines 12-13 disclose that the method is one-to-all, requiring that the plurality of demanded routes be found to a diverse group of nodes, in other words to nodes to which the path or route differs), processing each demand Ti consecutively using a shortest path routing method (fig 3 item 302, and col 5 lines 14-15, the distances of the paths resultant from the shortest

path algorithm are the initial cost solutions based on the initial routes) to obtain a corresponding initial route (the path selected in step 302, col 5 line 30) which satisfy the diversity requirements (satisfied as set forth above) if network parameters permit (network parameters are the delay of the path and cost, and delay of the path not exceeding a constraint constitutes a permission to be a candidate to proceed past fig 3 step 302 as set forth in col 5 lines 13-17), updating the network parameters based upon the initial routes R (the result of algorithms of fig 3 and 4 will update the reachability graph of fig 14 to arrive at fig 15, col 9 line 64 – col 10 line 2), re-processing demands T using a constrained (delay constraint, fig 3 item 304) diverse shortest path method to obtain corresponding final routes R' (the path determined in step 308, col 5 line 29, which replaces the above cited "path selected in step 302") until a stop criterion is satisfied (fig 3 item 308, wherein stop criterion is lowest cost), computing a final cost solution based on the final routes R, and outputting the final routes R and the final cost solution (fig 15 is a "reachability graph" which has the final cost solution of each final route (link) (col 9 line 64 – col 10 line 2), the values of which are computed and output from algorithms of figs 3 and 4).

4. Regarding claim 20, Huang discloses a method of determining routes for transmitting signals through a network (see title), the method comprising obtaining a plurality of demands (request to connect to device 206B, col 5 line 7, triggers the method that obtains and explores a plurality of path finding demands as disclosed below) each demand having diversity requirements (col 5 lines 12-13 disclose that the

method is one-to-all, requiring that the plurality of demanded routes be found to a diverse group of nodes, in other words to nodes to which the path or route differs), processing each demand Ti consecutively using a shortest path routing method (fig 3 item 302, and col 5 lines 14-15) to obtain a corresponding initial route Ri (the path selected in step 302, col 5 line 30) considering the diversity requirements Di (considered as set forth above), and re-processing demands T using a constrained (delay constraint, fig 3 item 304) diverse shortest path method to obtain corresponding final routes R' (the path determined in step 308, col 5 line 29, which replaces the above cited "path selected in step 302") until a stop criterion is satisfied (fig 3 item 308, wherein stop criterion is lowest cost).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,946,295 to Sofman et al. in view of US Patent 6,141,325 to Gerstel.

8. With regard to claims 1, 4, and 11, Sofman discloses a method of determining a route for transmitting a signal through a network, the method comprising (see title): obtaining network data, including link type data (patching policy, col 4 lines 57-58), spare capacity data (col 4 lines 30-32, wherein spans represent spare capacity, as more span combinations between two points provide more capacity for traffic to travel between those two points), and common mileage data (the table of col 6 is in units of mileage and is used to compare the secondary routes to thresholds to determine if they are valid, and this table is common to all secondary routes, col 6 lines 20-34); obtaining demand data, including origination node data (source), termination node data (destination), and diversity requirement data (flag) (col 5 lines 23-27); storing the network data and the demand data (col 4 lines 29-30); processing the demand data using a shortest path routing method to obtain an initial route (col 5 lines 29-32); updating the network data by decreasing the spare capacity data in accordance with the initial route (the spare capacity is decreased by removing the spans as set forth in col 5 lines 32-34); computing an initial cost based on the initial route (col 5 lines 41-45, wherein the statistical information includes costs as set forth in col 5 lines 48-51); updating the network data by increasing the spare capacity data in accordance with deleting the initial route (the spare capacity is increased by replacing all spans that were

removed as set forth in col 5 lines 37-40); re-processing the demand data using a constrained diverse shortest path routing method until a stop criterion is satisfied and obtaining a final route (constrained because spans from first route are not available, and stop criterion is that the constructed route is the shortest; col 5 lines 34-37); computing a final cost based on the final route (final route is second of pair of diverse shortest routes, col 5 lines 41-45, wherein the statistical information includes costs as set forth in col 5 lines 48-51, wherein the cost is based on route and therefore considered a routing cost); and outputting the final route and the final cost (col 5 lines 48-51). Sofman fails to disclose that the method include the step of obtaining vendor data. However, Gerstel discloses a method for enabling interoperability between different subnetworks (see title) that includes the step of obtaining vendor data (col 9 lines 31-39, col 9 lines 57-65, and figs 7A and 7C). Using the obtaining of the vendor data step in combination with the inventive routing method disclosed by Sofman would allow the inventive routing method of Sofman to work in networks with potentially incompatible subnetworks (see abstract) by making the incompatible characteristics of said subnetworks transparent to other subnetworks. It would therefore have been obvious to combine the method of Sofman with the method disclosed by Gerstel to arrive at the method of claim 1. The motivation to do so would have been to provide a mechanism for the routing method disclosed by Gerstel to have utility in an optical network environment that includes subnetworks with varying characteristics which may be incompatible with each other due to different vendor specifications of programming languages, etc.

9. With regard to claim 11, Sofman and Gerstel disclose the method of claim 1 and further disclose that the demand data include project integrity data. The demand data cited above includes a diversity flag that, if set to one, enables the calculation of a secondary route for the demand, which provides project integrity in that a path for the demand will still exist and data associated with the demand may still flow if the primary route's integrity is compromised, increasing the survivability of the network as set forth in col 2 lines 19-22.

10. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,946,295 to Sofman et al. in view of US Patent 6,141,325 to Gerstel as applied to claim 1 above, and further in view of US Patent 6,633,544 to Rexford et al.

11. Regarding claim 2, Sofman and Gerstel disclose the aspects of the method of claim 1, and Sofman further discloses that the method of determining a route for transmitting a signal through a network include the use of optical transponders in obtaining the final route (fig 7 shows transponder devices A-H that handle optical signals OC-3 and OC-12). Sofman discloses as set forth in the rejection of claim 1 that the constrained diverse shortest path method find the *shortest* route between origination and destination pairs. Sofman fails to explicitly disclose that the shortest route be in terms of a minimized number use of optical transponders. However, Rexford discloses that "a switch might precompute *shortest paths in terms of hop-count*..." Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention

to combine the knowledge that a shortest distance be in terms of hop count with the use of optical transponders as disclosed by Sofman to arrive at the method of claim 2, wherein a shortest path in terms of hop count minimize the number of hops, and wherein a hop is defined by a stop at an optical transponder, arriving at the method where the shortest path minimize hops, or use, of optical transponders. The motivation to do so would have been to accommodate for the latency inherent in a hop when determining shortest paths, the principle of latency of a switching device being well-known to anyone of ordinary skill in the art.

12. Claims 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,301,244 to Huang et al in view of US Patent 5,946,295 to Sofman et al.

13. With regard to claim 13, Huang discloses all aspects of the method of claim 12 and further discloses assigning a cost to each of a plurality of links in the network (illustrated in the reachability graph of fig 14 where plurality of links, which are represented by arrows, display a delay cost in the numbers next to the arrows), determining a shortest route from an origination node Ai (fig 15 item 102) to a termination node Zi (fig 15 item 110) based on link costs (fig 15 item 110 has above it the number 22, which is the sum of link costs 20 and 2 which are found on the route from 102 to 106 to 110, and which is a smaller cost that the sum of link costs between 102 and 104 and 110, which equals 24), and determining if route Ri satisfies the diversity requirements (diverse paths were found, as noted above and as is readily

apparent as illustrated by fig 15). Huang fails to disclose that the route Ri satisfies an optical transponder constraint. However, Sofman discloses a method of determining routes for transmitting signals that determines a shortest route (col 5 lines 41-45) that determines of the route satisfies an optical transponder constraint (fig 7 shows a network where the invention is implemented, wherein one sees that the method must find a route constrained by compatibility with optical transponders A, B, C, D, E, F, G, and H). It would have been obvious to one ordinarily skilled in the art at the time of the invention to combine the method disclosed by Huang with the method disclosed by Sofman by implementing the routing method disclosed by Huang as the primary routing method of the optical transponders noted above to arrive at the method of claim 13. The motivation to do so would have been to implement the routing method disclosed by Huang which in a commonly-deployed optical network, such as that disclosed by Sofman, as Huang fails to explicitly limit the use of its invention to any routing environment.

Allowable Subject Matter

14. Claims 3, 5-10, and 14-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Rockberger et al (US 6,061,736), Routing Over Similar Paths

b. Box et al (US 5,787,271), Spare Capacity Allocation Tool

c. Fahim et al (US 5,657,142), Optimal Allocation of Multiplexing Equipment and Distribution of Load in a Fiber Optic Network.

d. Qiu et al (US 5,729,692), Method for Assigning Inter-Nodal Traffic Loads to Channels in SONET Rings

e. Kasdan et al (US 6,847,607), Automatic Provisioning of Protection Circuits in a Communications Network

f. Benmohamed et al (US 6,909,700), Network Topology Optimization Methods and Apparatus for Designing IP Networks with Performance Guarantees

g. Chen (US 6,151,305), Method and Apparatus for Planning an ATM Network for an Area of Concentrated Demand for Transport Bandwidth

h. Schreyer (US 6,111,941), Telecommunication System with Loop-Free Switching Tables

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher P. Heinrichs whose telephone number is 571-272-8397. The examiner can normally be reached on Monday through Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RICKY NGO
PRIMARY EXAMINER
07/20/05